# Digitalization and Human Security: State Border Management Strategies in the Era of Industrial Revolution 4.0
A Study Conducted in Natuna District, Indonesia's border with Vietnam, Malaysia, Cambodia and Singapore

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**Abstract**

Indonesia is the fastest-growing country in digital adoption comparing to Brazil and China, as McKinsey's research report published on February 11, 2019. These facts and data were obtained from the research, which involved 17,000 people in 15 countries. The Covid-19 pandemic that has spread across the world, including Indonesia, promotes digital transformation and acceleration by changing ways to interact, learn, and work. As the largest archipelagic country in the world of 17,491 islands, Indonesia still has a wide digital divide. Internet access is still a luxurious thing and rare, especially for the islands of Natuna District on the state border. On the other hand, the government seeks to promote connectivity inclusion by providing internet access for 4,000 villages and sub-districts in 3T areas (disadvantaged, frontier, and outermost). It is needed various approaches to be strategies for managing state borders in the era of the industrial revolution 4.0. The theory used was state border management theory, human security, and theories related to digitalization. The methodological approach used was qualitative, with the expected research results is to provide solutions for border management strategies. Besides, a multidisciplinary approach is a characteristic of this research.

Keywords: State Border Management, Digitalization, Human Security.

## 1. Introduction

This paper discusses the strategy for managing state borders in the era of the industrial revolution 4.0, specifically on the digitalization and a human security perspective. It is relevant as the current national border management strategy should have adjusted to the era of the industrial revolution 4.0, which is followed by the characteristics of disruption. It is an era where change occurs very rapidly, as a result of which many old orders have changed and must be changed along with numerous innovations. Discourses about state border management have adapted and transformed

amidst the various developments in this era. In compliance with the global development paradigm in which some changes occur along with the development of information technology, elaboration on the border digitalization and the human security approaches reveals its urgency.

It becomes more explicit by the facts and data that digital adoption in Indonesia shows a significant number, as McKinsey's research report, published on February 11, 2019. Indonesia is the fastest country in implementing digital adoption according to research data involving 17,000 people in 15 countries. Likewise, the Covid-19 pandemic has conditionally forced to immediately implement digital acceleration and transformation. Various aspects of life change and adapt in terms of interacting, studying, and working. However, at the same time, there are problems related to the digital divide, which is wide between urban and rural areas, especially in archipelagic areas as the state border, such as Natuna Islands District.

Small border islands are the Republic of Indonesia (NKRI) territory, which borders the neighboring countries, strategically significant for development (Abubakar, M., 2006). The potential of the border islands can be divided into three: (1) natural resources and environmental services, (2) economic potential, and (3) a base for national defense (Dahuri, R. et al., 1998). As the largest archipelagic country in the world of 17,491 islands, the border management strategy must take into account the matters related to connectivity, including digital connectivity. Now various sectors can be driven by the use of digital media so that the development of the borders with a human security approach becomes more actual and relevant in following numerous developments and innovations.

Based on this argument, the question is: how can digitalization and the human security approach be used as a strategy in managing state borders? Particularly for Natuna District, Riau Islands Province, which Indonesian borders Vietnam, Malaysia, Cambodia, and Singapore. This questions is the main question in this study with the theme, "Digitalization and Human Security: State Border Management Strategies in the

Era of the Industrial Revolution 4.0, a study conducted in Natuna District, Indonesia border with Vietnam, Malaysia, Cambodia, and Singapore.

## 2. Theoritical Framework

State border is both Geopolitical and social issues. The border is viewed as a geopolitical issue whenever it is associated with efforts to preserve security stability and solid defense to protect the territorial sovereignty from threats of the other parties. However, the border is also seen as a social problem when the concern is not solely on geographical or territorial aspects, but on humans, communities, and the environment around the border (Sanak, Y., 2012). To elaborate on studies related to border management, we can use the Boundary Making theory proposed by Stephen B. Jones, which separates the scope of border management into four stages: a) allocation, b) delimitation, c) demarcation, and d) administration (Jones, SB, 1945).

Furthermore, the fourth stage, administration, has expanded in meaning and implementation, which shifted from management to border management (Pratt, M.A, 2006). The four stages in Stephen B. Jones's theory are related to one another, including a series of interrelated decision-making in its implementation (Sutisna, S., et., Al, 2010). (See illustration 1)
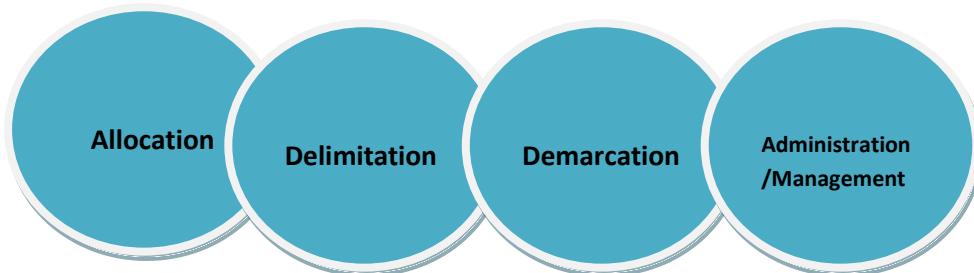
Allocation · Delimitation · Demarcation · Administration /Management

**Illustration 1. *Boundary Making Theory* (Jones, S. B. , 1945)**

According to the boundary-making theory, in good border area management, Administration/Management activities of border development can be carried out overlapping with demarcation. Based on this point, in reality, the challenges and dynamics that often occur in the field related to the economic, social, cultural, and political aspects. Since this stage is part of a follow-up to the separation of rights and obligations between countries due to the emergence of territorial borders, then in terms of segmentation, administrative/management activities go simultaneously with the implementation of boundary affirmation.   In this administration and development management stage that the volume of work in dealing with borders is the greatest one since it involves multi-sector and integrated planning is required (Sutisna, S., et., Al, 2010).

Regarding the scope of border administration and management, due to developments from the era of the industrial revolution 4.0, the human security and border digitalization approach are relevant. In the last decade, the concept of security has evolved and changed rapidly, in line with the changing conditions of international security from the Cold War to the post-Cold War era. The definition of security is currently more complex and multi-dimensional as it includes both conventional and non-conventional security issues (Wuryandari, G., et l, 2009).

As a consequence, border management today has two major paradigms. They are state-centric (state security) and human-centric (human security) approaches. Sanak explained that state security is oriented towards territorial-state security, particularly to maintain sovereignty and integrity by mobilizing military power. The understanding of state security only covers the political and military areas, where the state security can only be achieved if it is tightly protected by military power. However, this paradigm subsequently shifted. The object for security reference is no longer the "what" is secured but "who" the security target is. The concept of security has expanded in meaning from state security to individual security - from a traditional (military) perspective to a broader perspective that included non-military, not only perceived as territorial security, but also human security (Jones, SB, 1945 ).

Roland Paris, in his book Human Security: Paradigm Shift or Hot Air?, states that human security has at least 7 (seven) specific elements: a) economic security, b) food security, c) health security, d) environmental security, e) personal security, f) socio-cultural security, and g) political security (Paris, R, 2001). While Jorge Nef, in his article Human Security and Mutual

Vulnerability, suggests 5 (five) classifications of human security: a) environmental, personal, and physical security, b) economic security, c) social security, d) political security, and e) cultural security (Neff, J, 1997). Human security focuses on the welfare and quality of human life as a determinant indicator. It is based on indicators about the economy, education, and health from the Human Development Index (HDI).

This is similar to what Pratikno stated that the HDI, which consists of 3 (three) indicators (economy, education, and health), are parallel with the elements of human security. These three indicators are also the guarantee of sustainability and key parameters of the degree of human security. Hence, the three indices can reflect and cover aspects of human security (Pratikno, 2009). Likewise, Edy Suharto stated 3 (three) main things that must be considered in development. They are an economical improvement, community care, and human development (Soeharto, E, 2005).

In the era of the 4.0 industrial revolution that seeks digital transformation, digitalization is vital in various policy developments and innovations, including state border management. It is generally a process of changing media from printed, video, and audio forms to digital forms.

Digitalization has been described by Yoo and Lyytinen et al. (2010) as a transformation of socio-technical relationships and structure from non-digital artifacts to digital artifacts. Historically, there have been 3 (three) stages or waves of digitalization: a) the transition from analog content to digital content, b) the separation of devices that have historically been closely related, c) the emergence of new products (Yoo, Y., Lyytinen, K., et al., 2010).

Yohanes Sanak (2012) conducted a study at the border areas by elaborating on human security and border politics, both in Indonesia-Timor Leste and Indonesia-Malaysia border areas. The research employed qualitative methods and focused on 3 (three) significant indicators: economy, health, and education. In line with Sanak, Ganewat Wuryandari (2009) has also previously conducted a study related to security at the Indonesian border with Timor Leste. She used qualitative methods and found that the security issues at the border areas were the results of the negligence of human security.

Comprehensive security is the terminology used by Ganewat as a conclusion by considering the aspects of national defense and security, public order and security, economic empowerment, social relations, culture, and public awareness. The article by Bonggas Adhi Chandra (2010), "Searching for Comprehensive Border Management Formats," with qualitative

research methods, highlights 2 (two) important dimensions of border management: the domestic dimension and the external dimension. The domestic dimension regards the solutions related to domestic institutions, while the external dimension is related to neighboring countries in border management, both at the legal level (making a regulation, MoUs, etc.) and practical (joint patrols, exchange of intelligence information, etc.).

Even though there were studies related to the management of state borders, including the human security approach and qualitative research methods, none of them explicitly and specifically elaborated the presence of digitalization at state borders. Digitalization, which enriched the study of the security approach, especially on human security, has not yet become the focus of discussions, particularly related to state borders. In this part, the writer finds a gap in analysis and approaches regarding state borders that need to be presented in this paper, especially in Natuna District, Riau Islands Province, the border between Indonesia and Vietnam, Malaysia, Cambodia, and Singapore.
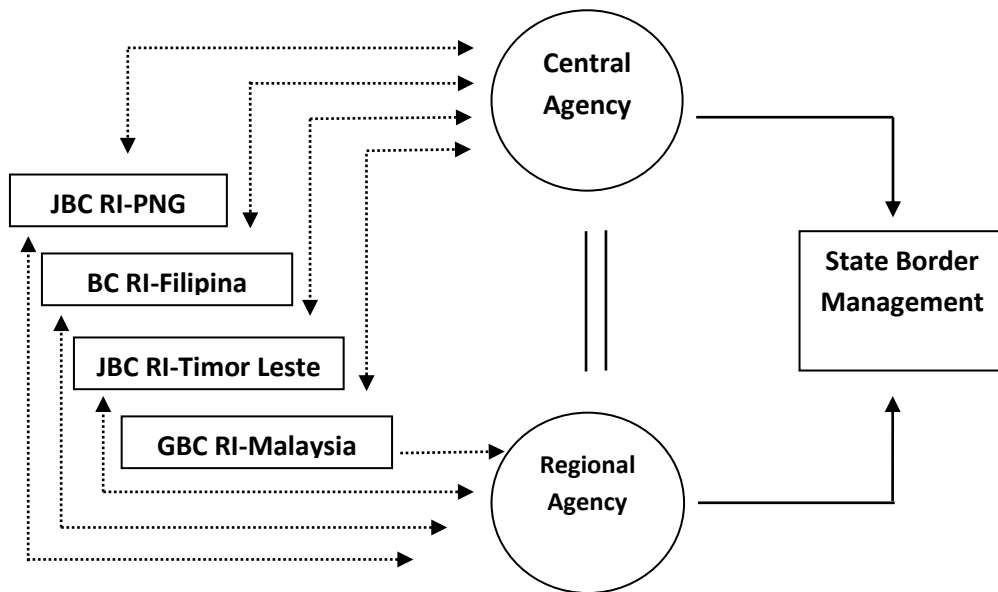
## 3. Research Method

The locus of this study is the border area between Indonesia and Vietnam, Malaysia, Cambodia, and Singapore which specifically takes place at Natuna District, Riau Islands Province. This research is designed using a case study and a qualitative approach, where it was used as an instrumental case study. The writer wants to show something unique, special, and different from the explanations obtained from other objects. This study used 2 (two) data collection techniques: 1) interviews with key informants who are deemed to have sufficient access to information (primary data), 2) literary study (secondary) by taking inventory of various writings and information through books, journals, reports, and media news.

## 4. Results and Findings

Each border area has its own problems and characteristics, which certainly cannot be compared in providing solutions. However, the fact is that the border areas have not received priority attention and policy for too long. Now the government has begun to pay attention by presenting sectoral and multisectoral government agency policies to the borders. Previously, border management was handled by 3 (three) forms of the institution as explained by Aryanta Nugraha (2010) in his article "Institutionalization of Border Area Management in Indonesia." (Nugraha, A, 2010). These three institutions area.

a. First, border committees, cooperation forums between Indonesia and neighboring countries, including the RI-Malaysia General Border Committee (GBC), the Joint Border Committee (JBC), RI-PNG, JBC RI-Timor Leste, and the RI-Philippines Border Committee,

b. Second, related government agencies, sectorally and technically, and

c. Third, special units or agencies in the regions that handle border areas management collaborated with neighboring countries, such as Sosek Malindo in West Kalimantan, East Kalimantan, Riau, and the Regional Border and Cooperation Agency (BPKD) at the Papua Border.

The figure below (illustration 2) shows the relationship between the border committee, central government agencies, and local governments.



Source: Ikhwanudin, "Summary of the Study on the Compilation and Development of Border Areas between countries," Kemeneg PPN (Ikhwanudin, M, 2010).

Illustration 2: Relationship between the Border Committee, central government agencies and local governments in the management of border areas

In its development, an institution was established. It is assigned to determine policies for border development program, to manage budget requirements, to coordinate implementation, and to conduct evaluation and supervision of the management of State Boundaries and Border Areas. This institution is the National Agency for Border Management, was established through the Presidential Regulation of the Republic of Indonesia Number 12 of 2010 concerning the National Agency for Border Management. This agency was formed by considering article 18 paragraph (1) of Law Number 43 of 2008 concerning State Territory. This agency coordinates with 27 ministries/agencies and 15 provinces, and 54 districts/cities in managing the border areas.

The urgency of border management in various regions in Indonesia refers to Stephen Jones' theory of border making focuses on 4 (four) main stages: allocation, delimitation, demarcation, and administration/management. All stages are related to one another in implementation, yet they need to be integrated. Even though it specifically elaborates on digitalization and human security, which mostly discusses the administration/management, it will always be related to 3 (three) other things. This is in line with border management, which has changed its paradigm and approach.

Recent developments have brought the study and border management to a not-only-state-centric approach but require a human-centric approach (human security). Human security is a way to answer the challenges of border management today, which are not only based on conventional security but also non-conventional. In particular, border management in the conceptual reference from Pratikno (2009) affirms 3 (three) main parallel things to the Human Development Index: economy, education, and health. In the current development in the era of the 4.0 industrial revolution in which various sectors are driven by digitalization, integration with digital systems is imperative.

The era of the industrial revolution 4.0 indicates a rapid change from non-digital (analog) to digital systems. Digital transformation and acceleration are highly regarded during the Covid-19, which has become a global pandemic since March 2, 2020. Digitalization is a necessity for state border management in which, if correlated with human security, aspects of education, health, and economy, must be integrated with digital systems. If it is not, the disparity will always be normality for border communities. On the other hand, as the largest archipelagic country in

the world of 17,491 islands, Indonesia has a digital divide that is still wide since it has not evenly distributed access for internet network connectivity.

Internet access is still a luxurious thing and rare, especially for the islands of Natuna District on the state border. The latest condition in 2020, internet access for Natuna District has improved compared to previous years, although now, there are only a few islands that can access the internet properly. Ari Mahendra, one of the student leaders from Natuna, gave his response regarding internet connectivity in Natuna District and its relation to community internet usage activities.

*"Not all islands have good internet connections, only a few islands: Pulau Tiga, Sedanau, Ranai, and its surroundings. These three islands really have a good signal, while the rest we should hunt for the signal. The community has also used digital devices or online systems to sell local products such as fish crackers, atomic (small) crackers, leaf mats, and et cetera. Meanwhile, products from outside Natuna include electronic devices, clothing, household appliances, and transportation. Usually, Natuna residents use WhatsApp, Facebook, and Instagram, but mostly on Facebook because almost all people in the islands want to use Facebook."*

Similarly, another student, Mury Prandika from Serasan Island, Natuna, gave an overview of internet connectivity in Natuna, especially the island where his family lives. The island where he lives is a border area that was once active trading with Malaysia and even used the Ringgit currency in transactions. The trade occurs due to socio-cultural factors as citizens of different countries, but they are still relatives and geographically closer to Malaysia than to other islands in Indonesia.

*"At my place in Serasan, the signaling is not too good, but online trading activities also exist, such as buying goods from the application and selling them to the public in Serasan. I rarely hear about local products sold outside the country, but my mother does sell it too, and sometimes she sends goods to Singapore, such as salted fish, fish chips, etc. That's because she has acquaintances in Singapore as he had previously worked there. Previously, Serasan bought goods, like staple goods, in Malaysia, but now it is banned. Indonesian citizens who are caught carrying goods from Malaysia are arrested by officers. "*

While limited connectivity at the border, border residents continue to adapt to existing digital developments to improve their standard and quality of life. In various social media channels with the keyword 'Natuna', economic movements have been seen through buying and selling activities using social media, such as WhatsApp, Facebook, and Instagram. It provides an overview and the fact that border areas cannot be separated from digitalization. The digital market opportunity has expanded to Natuna, which is the border area. On the other hand, local products must be of high quality and competitive so that digitalization at the border can benefit the people of Natuna. Below are some screenshots depicting digital developments in Natuna.



Source: Screenshots from Facebook and Instagram on December 7, 2020

Illustration 3: Social media accounts with the keyword Natuna used in buying and selling activities and other means of sharing information

Digitalization has been installed in the education sector in Natuna from a government initiative as an implementation of the order from the President of the Republic of Indonesia to all Ministries in Working Cabinet to prioritize development in the 3T category (Outermost, Underdeveloped, Disadvantaged) areas. The Ministry of Education and Culture of the Republic of Indonesia (Kemendikbud RI) has designated Natuna as one of the areas for implementing the Digital School program, which is a part of optimizing the use of information and communication technology in supporting the development of the education sector. In 2019, the official website of the Natuna Regency Government (www.natunakab.go.id) reported that in addition to

launching the School digitization program and the distribution of the Smart Indonesia Card (KIP), the Minister of Education and Culture, Muhadjir Efendi handed over the facilities to support the digital learning process.

However, this government policy must be completed from upstream to downstream. It must be paid attention both from the provision of facilities to support the digitalization of education, digital human resources for educators, and even the range of network connectivity to populated small islands. This is because Natuna Regency has 154 islands, with 27 islands (17.53 percent) inhabited and most of the islands (127) uninhabited. Only three islands have good internet connections from the 27 inhabited islands in Natuna. Digital development and the enthusiasm of society for digital transformation in various sectors need to be followed by government efforts to design and implement unidirectional policy.

The next sector in discussions is related to human security: health. The use of digital systems in health services in Natuna is still in the adjustment stage. Most of the medical information is obtained from the official website of the Health Department and the social media accounts of the Communication and Information Department (especially those related to the development of Covid-19). Hospitals in Natuna have also begun to transform with the digital system Natuna Hospital has, which develops an online patient registration system. Natuna Regional Hospital has also used Telemedicine, a computer and monitor that doctors use to consult with other doctors outside Natuna. A stable network is required to run this device, and Natuna Hospital has had free wifi with a speed of 140 Mbps.

The official website rsud.natuna.go.id and the official Facebook page of the NatunaHospital can also be accessed by visitors to give criticism and suggestions to the hospital management. However, this facility is not evenly distributed to all inhabited islands due to the condition of the area, which has many small inhabited islands and a digital system that is still under development. But digitalization in the health sector has begun to be embraced by the public. Overall digital development brings the human security approach to becoming significantly relevant to the state border management efforts in the era of the industrial revolution 4.0, including the health sector. The following illustration describes how digitalization strengthens human security, then human security is presented to encourage transformation with the ultimate goal of the realization of national goals and state sovereignty at the border.
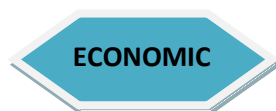
ECONOMIC

Illustration 4: Correlation between human security and 3 (three) main indicators in a border management strategy.

Based on the illustrations, arguments, and data, it can be seen that there are relevance and correlation of human security and digitalization in a state border management strategy. Eventually, 3 (three) main human security indicators, in line with HDI and digitally integrated, can maintain state sovereignty that subsequently can drive the accomplishment of national goals. National goals are strengthened from state borders as the guard and front yard of the country. The progress of Natuna with a human security approach and the penetration of digital technology (digitalization) has become a major strength for Indonesia to manage state borders comprehensively.

## 5. Conclusion

Indonesia is the largest archipelagic country in the world with 17,491 islands, is classified as a very-fast country in implementing digital adoption in the era of the industrial revolution 4.0. Simultaneously, there is a wide digital divide where the connectivity is not evenly distributed throughout the country, including the islands on the border areas. However, digitalization has become an integral part of various systems and sectors of public life. Therefore, it requires an application at different levels for both effectiveness and innovation. To manage state borders in Natuna, the same effort is needed. The human security approach by referring to 3 (three) main indicators related to the HDI (economy, education, and health) is significantly relevant and effective in strengthening border areas when it is integrated with a digital system (digitalization). In the economic sector, the development of digital interaction by the community of Natuna has also brought changes to new patterns in the digital era. Internet networks and virtual

intersections have brought people's economic activities to a different level and a wider range of interactions. From buying and selling activities in Natuna, the quality of local products must be gradually improved and encouraged by creativity in the use of digital media so that local markets can also provide space for residents to improve their standard of living. In the education sector, the government's role was shown by promoting digitalization and providing infrastructure assistance to support the digital learning process. However, there were still many areas in small inhabited islands without adequate access to the internet and supporting facilities.

Likewise, with the health sector, digitalization helped to provide solutions for the quality of health services at borders. However, at the same time, health services are not evenly distributed to all inhabited islands in Natuna. It is also influenced by its geographical location, which consists of islands and separated by a sea to go from one island to another island. Overall, the provision of digital supporting infrastructure for connectivity needs to be made equally to all islands. Moreover, the community needs to be educated in maximizing digital development for productive things. The writer has not conducted in-depth elaboration on the details of the development rate of buying and selling, trading, and/or e-commerce from the digitalization process. It is expected to be a further writing analysis on a similar topic of study.

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